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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,311	01/24/2006	Brigitte Bandl-Konrad	095309.56500US	8148

23911 7590 07/10/2006

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EXAMINER	
TRAN, BINH Q	
ART UNIT	**PAPER NUMBER**
3748	

DATE MAILED: 07/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/541,311	BANDL-KONRAD ET AL.	
	Examiner	Art Unit	
	BINH Q. TRAN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/24/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Receipt and entry of Applicant's Preliminary Amendment dated July 05, 2005 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-32, and 33-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. More specifically,

- In claim 16, line 6, the phase " ***capable of*** " is indefinite. The phase has been held that the recitation that an element is " capable of " performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison, 69 USPQ 138.*

- In claim 16, lines 7 and 10, the use of alternative expression ***"at least one of/ at one of "*** renders the claims indefinite.

- In claim 33, lines 10-11, the use of alternative expression ***"and/or "*** renders the claims indefinite because the expressions on either side of the ***"and/or"*** are not considered equivalent and cause uncertainty with respect to the scope of the claims.

The claims not specifically mentioned are indefinite since they depended from one of the above claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 16-17, 19-21, and 23-44 are rejected under 35 U.S.C. 102 (e) as being anticipated by Twigg et al. (Twigg'874) (Patent Number 6,863,874).

Regarding claims 16-17, 19-21, 23, 33, and 41, Twigg'874 discloses an installation for aftertreatment of exhaust gas (100) generated by an internal combustion engine (See col. 5, lines 5-15), comprising: a nitrogen oxide storage catalytic converter (28), an SCR catalytic converter (30) arranged either downstream of or integrated with the nitrogen oxide storage catalytic converter, said SCR catalytic converter being capable of storing ammonia, and at least one of: an

NO2 producing catalytic converter arranged upstream of the SCR catalytic converter, and a particulate filter (16) arranged at one of: (i) a position upstream of the nitrogen oxide storage catalytic converter; an oxidation catalytic converter (14) arranged as a first exhaust gas aftertreatment component, as seen in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claims 24-25, Twigg'874 further discloses that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic converter which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 26, Twigg'874 further discloses that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic converter which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 27, Twigg'874 further discloses that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic converter which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 28, Twigg'874 further discloses that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic

converter which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 29, Twigg'874 further discloses that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic converter which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 30, Twigg'874 further discloses that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic converter which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 31, Twigg'874 further discloses that the nitrogen oxide storage catalytic converter and the SCR catalytic converter are integrated in a common, combined catalytic converter which includes a nitrogen oxide storage catalyst material and an SCR catalyst material in mixed form or alternating in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 32, Twigg'874 further discloses that the engine is a motor vehicle propelling engine (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 34, Twigg'874 further discloses that wherein a desired ammonia generation quantity which is to be generated during a current regeneration operating phase of the

nitrogen oxide storage catalytic converter is determined, and the subsequent regeneration operating phase is carried out as a function of the desired ammonia generation quantity determined (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claims 35 and 42, Twigg'874 further discloses that wherein a condition whereby the recorded exhaust gas air ratio downstream of the nitrogen oxide storage catalytic converter drops below a threshold value, which is predetermined as a function of the desired ammonia generation quantity, is used as a criterion for terminating a respective regeneration operating phase of the nitrogen oxide storage catalytic converter (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 36, Twigg'874 further discloses that wherein a condition whereby the recorded exhaust gas air ratio downstream of the nitrogen oxide storage catalytic converter drops below a threshold value, which is predetermined as a function of the desired ammonia generation quantity, is used as a criterion for terminating a respective regeneration operating phase of the nitrogen oxide storage catalytic converter (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claims 37 and 43, Twigg'874 further discloses that wherein during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claims 38 and 44, Twigg'874 further discloses that wherein during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 39, Twigg'874 further discloses that wherein, during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Regarding claim 40, Twigg'874 further discloses that wherein, during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 5, lines 4-67; col. 6, lines 1-7; col. 7, lines 1-25).

Claims 16, and 32-44 are rejected under 35 U.S.C. 102 (e) as being anticipated by Stanglmaier et al. (Stanglmaier) (Patent Number 6,732,507).

Regarding claims 16, 33, and 41, Stanglmaier discloses an installation and method for aftertreatment of exhaust gas (14) generated by an internal combustion engine (10), comprising: a nitrogen oxide storage catalytic converter (20), an SCR catalytic converter (30) arranged either downstream of or integrated with the nitrogen oxide storage catalytic converter, said SCR catalytic converter being capable of storing ammonia, and at least one of: an NO2 producing catalytic converter arranged upstream of the SCR catalytic converter, and a particulate filter (40) arranged at one of: (i) a position upstream of the nitrogen oxide storage catalytic converter; (ii) a position between the nitrogen oxide storage catalytic converter and the SCR catalytic converter, and (iii) a position downstream of the SCR catalytic converter (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claim 32, Stanglmaier further discloses that the engine is a motor vehicle propelling engine (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claim 34, Stanglmaier further discloses that wherein a desired ammonia generation quantity which is to be generated during a current regeneration operating phase of the nitrogen oxide storage catalytic converter is determined, and the subsequent regeneration operating phase is carried out as a function of the desired ammonia generation quantity determined (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claims 35 and 42, Stanglmaier further discloses that wherein a condition whereby the recorded exhaust gas air ratio downstream of the nitrogen oxide storage catalytic converter drops below a threshold value, which is predetermined as a function of the desired ammonia generation quantity, is used as a criterion for terminating a respective regeneration

operating phase of the nitrogen oxide storage catalytic converter (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claim 36, Stanglmaier further discloses that wherein a condition whereby the recorded exhaust gas air ratio downstream of the nitrogen oxide storage catalytic converter drops below a threshold value, which is predetermined as a function of the desired ammonia generation quantity, is used as a criterion for terminating a respective regeneration operating phase of the nitrogen oxide storage catalytic converter (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claims 37 and 43, Stanglmaier further discloses that wherein during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claims 38 and 44, Stanglmaier further discloses that wherein during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claim 39, Stanglmaier further discloses that wherein, during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion

device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Regarding claim 40, Stanglmaier further discloses that wherein, during a respective regeneration operating phase of the nitrogen oxide storage catalytic converter, the combustion device is operated under lean-burn conditions, in particular with an air ratio of between 1.0 and 1.2, and the exhaust gas air ratio upstream of the nitrogen oxide storage catalytic converter is lowered into the rich range ($\lambda < 1$) by reducing agent being fed to the exhaust gas (e.g. See Fig. 1; col. 3, lines 49-67; col. 4, lines 1-67; col. 5, lines 1-8).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 18, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Twigg'874 in view of Twigg et al. (Twigg) (Patent Number 6,857,265).

Regarding claims 18, and 22, Twigg'874 discloses all the claimed limitation as discussed above except that an second oxidation catalytic converter arranged as last in exhaust gas aftertreatment component, as seen in the direction of flow of the exhaust gas.

Twigg discloses an installation for aftertreatment of exhaust gas (20) generated by an internal combustion engine (10), comprising: a nitrogen oxide storage catalytic converter (28), and at least one of: an NO2 producing catalytic converter, and a particulate filter (26) arranged at one of: (i) a position upstream of the nitrogen oxide storage catalytic converter; an oxidation catalytic converter (24) arranged as a first exhaust gas aftertreatment component, as seen in the direction of flow of the exhaust gas; and an oxidation catalytic converter (30) as a last exhaust gas aftertreatment component as seen in the direction of flow of the exhaust gas (e.g. See Fig. 1; col. 5, lines 49-67; col. 6, lines 1-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to use oxidation catalytic converter arranged as a first and last in the exhaust gas aftertreatment component, as seen in the direction of flow of the exhaust gas of Twigg'874, as taught by Twigg for the purpose of oxidation the NOx in the exhaust gas of an internal combustion engine, so as to reduce the poisoned materials in the exhaust purifying catalyst system and to reduce amount of nitrogen oxides in the exhaust gas of the lean-burn engine, and further improve the performance of the engine and the efficiency of the exhaust purifying catalyst system.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Hu et al. (Pat. No. 7063642), Kupe et al. (Pat. No. 6832473), Hu et al. (Pat. No. 7062904), Minami (Pat. No. 6865882), and Deeba (Pat. No. 6912847) all discloses an exhaust gas purification for use with an internal combustion engine.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
June 26, 2006

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